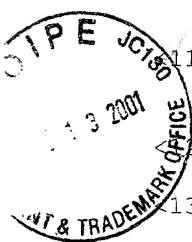


#9

SEQUENCE LISTING



<110> Peak, Ian
Jennings, Michael

<120> MODIFIED SURFACE ANTIGEN

<130> 8795-24U1

<140> US 09/771,382

<141> 2001-01-25

<150> US 60/177,917

<151> 2000-01-25

<160> 52

<170> PatentIn version 3.0

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Ala Ser Ala Asn Asn Glu Glu Gln Glu Glu Asp Leu Tyr Leu Asp Pro
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Val Gln Arg Thr Val Ala Val Leu Ile Val Asn Ser Asp Lys Glu Gly
65 70 75 80

Thr Gly Glu Lys Glu Lys Val Glu Glu Asn Ser Asp Trp Ala Val Tyr
85 90 95

Phe Asn Glu Lys Gly Val Leu Thr Ala Arg Glu Ile Thr Leu Lys Ala
100 105 110

Gly Asp Asn Leu Lys Ile Lys Gln Asn Gly Thr Asn Phe Thr Tyr Ser
115 120 125

Leu Lys Lys Asp Leu Thr Asp Leu Thr Ser Val Gly Thr Glu Lys Leu
130 135 140

Ser Phe Ser Ala Asn Gly Asn Lys Val Asn Ile Thr Ser Asp Thr Lys
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Gly Leu Asn Phe Ala Lys Glu Thr Ala Gly Thr Asn Gly Asp Thr Thr

Val	His	Leu	Asn	Gly	Ile	Gly	Ser	Thr	Leu	Thr	Asp	Thr	Leu	Leu	Asn
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Val	Arg	Thr	Tyr	Asp	Thr	Val	Glu	Phe	Leu	Ser	Ala	Asp	Thr	Lys	Thr
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Lys	Ile	Gly	Ala	Lys	Thr	Ser	Val	Ile	Lys	Glu	Lys	Asp	Gly	Lys	Leu
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Val	Thr	Gly	Lys	Asp	Lys	Gly	Glu	Asn	Gly	Ser	Ser	Thr	Asp	Glu	Gly
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Glu	Gly	Leu	Val	Thr	Ala	Lys	Glu	Val	Ile	Asp	Ala	Val	Asn	Lys	Ala
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Gly	Trp	Arg	Met	Lys	Thr	Thr	Thr	Ala	Asn	Gly	Gln	Thr	Gly	Gln	Ala
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Asp	Lys	Phe	Glu	Thr	Val	Thr	Ser	Gly	Thr	Asn	Val	Thr	Phe	Ala	Ser
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Thr	Val	Met	Tyr	Asp	Val	Asn	Val	Gly	Asp	Ala	Leu	Asn	Val	Asn	Gln
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Leu	Gln	Asn	Ser	Gly	Trp	Asn	Leu	Asp	Ser	Lys	Ala	Val	Ala	Gly	Ser
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Ser	Gly	Lys	Val	Ile	Ser	Gly	Asn	Val	Ser	Pro	Ser	Lys	Gly	Lys	Met
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Ser	Val	Ser	Leu	Gly	Ala	Gly	Ala	Asp	Ala	Pro	Thr	Leu	Ser	Val	Asp
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Gly	Asp	Ala	Leu	Asn	Val	Gly	Ser	Lys	Lys	Asp	Asn	Lys	Pro	Val	Arg

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Ala	Gln	Leu	Lys	Gly	Val	Ala	Gln	Asn	Leu	Asn	Asn	Arg	Ile	Asp	Asn	
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Val	Asp	Gly	Asn	Ala	Arg	Ala	Gly	Ile	Ala	Gln	Ala	Ile	Ala	Thr	Ala	
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Gly	Leu	Val	Gln	Ala	Tyr	Leu	Pro	Gly	Lys	Ser	Met	Met	Ala	Ile	Gly	
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Gly	Gly	Thr	Tyr	Arg	Gly	Glu	Ala	Gly	Tyr	Ala	Ile	Gly	Tyr	Ser	Ser	
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Ile	Ser	Asp	Gly	Gly	Asn	Trp	Ile	Ile	Lys	Gly	Thr	Ala	Ser	Gly	Asn	
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Leu	Glu	Thr	Ile	Ser	Leu	Ser	Met	Thr	Asn	Asp	Ser	Lys	Glu	Phe	Val	
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Asp	Pro	Tyr	Ile	Val	Val	Thr	Leu	Lys	Ala	Gly	Asp	Asn	Leu	Lys	Ile	
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Lys	Gln	Asn	Thr	Asn	Glu	Asn	Thr	Asn	Ala	Ser	Ser	Phe	Thr	Tyr	Ser	
		115					120					125				
Leu	Lys	Lys	Asp	Leu	Thr	Gly	Leu	Ile	Asn	Val	Glu	Thr	Glu	Lys	Leu	
	130					135					140					

Ser Phe Gly Ala Asn Gly Lys Lys Val Asn Ile Ile Ser Asp Thr Lys
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 Gly Leu Asn Phe Ala Lys Glu Thr Ala Gly Thr Asn Gly Asp Thr Thr
 165 170 175
 Val His Leu Asn Gly Ile Gly Ser Thr Leu Thr Asp Met Leu Leu Asn
 180 185 190
 Thr Gly Ala Thr Thr Asn Val Thr Asn Asp Asn Val Thr Asp Asp Glu
 195 200 205
 Lys Lys Arg Ala Ala Ser Val Lys Asp Val Leu Asn Ala Gly Trp Asn
 210 215 220
 Ile Lys Gly Val Lys Pro Gly Thr Thr Ala Ser Asp Asn Val Asp Phe
 225 230 235 240
 Val Arg Thr Tyr Asp Thr Val Glu Phe Leu Ser Ala Asp Thr Lys Thr
 245 250 255
 Thr Thr Val Asn Val Glu Ser Lys Asp Asn Gly Lys Lys Thr Glu Val
 260 265 270
 Lys Ile Gly Ala Lys Thr Ser Val Ile Lys Glu Lys Asp Gly Lys Leu
 275 280 285
 Val Thr Gly Lys Gly Lys Gly Glu Asn Gly Ser Ser Thr Asp Glu Gly
 290 295 300
 Glu Gly Leu Val Thr Ala Lys Glu Val Ile Asp Ala Val Asn Lys Ala
 305 310 315 320
 Gly Trp Arg Met Lys Thr Thr Thr Ala Asn Gly Gln Thr Gly Gln Ala
 325 330 335
 Asp Lys Phe Glu Thr Val Thr Ser Gly Thr Lys Val Thr Phe Ala Ser
 340 345 350
 Gly Asn Gly Thr Thr Ala Thr Val Ser Lys Asp Asp Gln Gly Asn Ile
 355 360 365
 Thr Val Lys Tyr Asp Val Asn Val Gly Asp Ala Leu Asn Val Asn Gln
 370 375 380
 Leu Gln Asn Ser Gly Trp Asn Leu Asp Ser Lys Ala Val Ala Gly Ser
 385 390 395 400
 Ser Gly Lys Val Ile Ser Gly Asn Val Ser Pro Ser Lys Gly Lys Met
 405 410 415
 Asp Glu Thr Val Asn Ile Asn Ala Gly Asn Asn Ile Glu Ile Thr Arg
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 Asn Gly Lys Asn Ile Asp Ile Ala Thr Ser Met Thr Pro Gln Phe Ser
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Ser Val Ser Leu Gly Ala Gly Ala Asp Ala Pro Thr Leu Ser Val Asp
450 455 460

Asp Glu Gly Ala Leu Asn Val Gly Ser Lys Asp Ala Asn Lys Pro Val
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Arg Ile Thr Asn Val Ala Pro Gly Val Lys Glu Gly Asp Val Thr Asn
485 490 495

Val Ala Gln Leu Lys Gly Val Ala Gln Asn Leu Asn Asn Arg Ile Asp
500 505 510

Asn Val Asn Gly Asn Ala Arg Ala Gly Ile Ala Gln Ala Ile Ala Thr
515 520 525

Ala Gly Leu Val Gln Ala Tyr Leu Pro Gly Lys Ser Met Met Ala Ile
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Gly Gly Gly Thr Tyr Leu Gly Glu Ala Gly Tyr Ala Ile Gly Tyr Ser
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Thr Val Ala Thr Ala Val Leu Ala Thr Leu Leu Ser Ala Thr Val Gln
35 40 45

Ala Asn Ala Thr Asp Thr Asp Glu Asp Glu Glu Leu Glu Ser Val Ala
50 55 60

Arg Ser Ala Leu Val Leu Gln Phe Met Ile Asp Lys Glu Gly Asn Gly
65 70 75 80

Glu Ile Glu Ser Thr Gly Asp Ile Gly Trp Ser Ile Tyr Tyr Asp Asp
85 90 95

His Asn Thr Leu His Gly Ala Thr Val Thr Leu Lys Ala Gly Asp Asn
100 105 110

Leu Lys Ile Lys Gln Ser Gly Lys Asp Phe Thr Tyr Ser Leu Lys Lys
115 120 125

Asn Ile Asp Ile Ala Thr Ser Met Thr Pro Gln Phe Ser Ser Val Ser
435 440 445

Leu Gly Ala Gly Ala Asp Ala Pro Thr Leu Ser Val Asp Asp Glu Gly
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Ala Leu Asn Val Gly Ser Lys Asp Ala Asn Lys Pro Val Arg Ile Thr
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Asn Val Ala Pro Gly Val Lys Glu Gly Asp Val Thr Asn Val Ala Gln
485 490 495

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Gly Asn Ala Arg Ala Gly Ile Ala Gln Ala Ile Ala Thr Ala Gly Leu
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Thr Tyr Leu Gly Glu Ala Gly Tyr Ala Ile Gly Tyr Ser Ser Ile Ser
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35 40 45

Ala Ser Thr Thr Asp Asp Asp Asp Leu Tyr Leu Glu Pro Val Gln Arg
50 55 60

Thr Ala Val Val Leu Ser Phe Arg Ser Asp Lys Glu Gly Thr Gly Glu
65 70 75 80

Lys Glu Val Thr Glu Asp Ser Asn Trp Gly Val Tyr Phe Asp Lys Lys
85 90 95

Gly Val Leu Thr Ala Gly Thr Ile Thr Leu Lys Ala Gly Asp Asn Leu

Val 65	Leu	Arg	Thr	Val 70	Ala	Val	Leu	Ile	Val 75	Asn	Ser	Asp	Lys	Glu	Gly 80
Thr	Gly	Glu	Lys 85	Glu	Lys	Val	Glu	Glu	Asn 90	Ser	Asp	Trp	Ala	Val 95	Tyr
Phe	Asn	Glu	Lys 100	Gly	Val	Leu	Thr	Ala	Arg 105	Glu	Ile	Thr	Leu	Lys 110	Ala
Gly	Asp	Asn 115	Leu	Lys	Ile	Lys	Gln	Asn	Gly 120	Thr	Asn	Phe 125	Thr	Tyr	Ser
Leu	Lys 130	Lys	Asp	Leu	Thr	Asp 135	Leu	Thr	Ser	Val	Gly 140	Thr	Glu	Lys	Leu
Ser 145	Phe	Ser	Ala	Asn	Gly 150	Asn	Lys	Val	Asn	Ile 155	Thr	Ser	Asp	Thr	Lys 160
Gly	Leu	Asn	Phe 165	Ala	Lys	Glu	Thr	Ala	Gly 170	Thr	Asn	Gly	Asp	Thr 175	Thr
Val	His	Leu	Asn 180	Gly	Ile	Gly	Ser	Thr 185	Leu	Thr	Asp	Thr	Leu 190	Leu	Asn
Thr	Gly	Ala 195	Thr	Thr	Asn	Val	Thr 200	Asn	Asp	Asn	Val	Thr 205	Asp	Asp	Glu
Lys	Lys 210	Arg	Ala	Ala	Ser	Val 215	Lys	Asp	Val	Leu	Asn 220	Ala	Gly	Trp	Asn
Ile 225	Lys	Gly	Val	Lys	Pro 230	Gly	Thr	Thr	Ala	Ser 235	Asp	Asn	Val	Asp	Phe 240
Val	Arg	Thr	Tyr	Asp 245	Thr	Val	Glu	Phe	Leu 250	Ser	Ala	Asp	Thr	Lys 255	Thr
Thr	Thr	Val	Asn 260	Val	Glu	Ser	Lys	Asp 265	Asn	Gly	Lys	Lys	Thr 270	Glu	Val
Lys	Ile 275	Gly	Ala	Lys	Thr	Ser	Val 280	Ile	Lys	Glu	Lys	Asp 285	Gly	Lys	Leu
Val 290	Thr	Gly	Lys	Asp	Lys	Gly 295	Glu	Asn	Gly	Ser	Ser 300	Thr	Asp	Glu	Gly
Glu 305	Gly	Leu	Val	Thr	Ala 310	Lys	Glu	Val	Ile	Asp 315	Ala	Val	Asn	Lys	Ala 320
Gly	Trp	Arg	Met	Lys 325	Thr	Thr	Thr	Ala	Asn 330	Gly	Gln	Thr	Gly	Gln 335	Ala
Asp	Lys	Phe	Glu 340	Thr	Val	Thr	Ser	Gly 345	Thr	Asn	Val	Thr	Phe 350	Ala	Ser
Gly	Lys	Gly 355	Thr	Thr	Ala	Thr	Val 360	Ser	Lys	Asp	Asp	Gln 365	Gly	Asn	Ile

Ala 50	Asn	Ala	Thr	Asp	Glu	Asp 55	Glu	Glu	Glu	Glu	Leu 60	Glu	Pro	Val	Val
Arg 65	Ser	Ala	Leu	Val	Leu 70	Gln	Phe	Met	Ile	Asp 75	Lys	Glu	Gly	Asn	Gly 80
Glu	Asn	Glu	Ser	Thr 85	Gly	Asn	Ile	Gly	Trp 90	Ser	Ile	Tyr	Tyr	Asp 95	Asn
His	Asn	Thr	Leu 100	His	Gly	Ala	Thr	Val 105	Thr	Leu	Lys	Ala	Gly 110	Asp	Asn
Leu	Lys	Ile 115	Lys	Gln	Asn	Thr	Asn 120	Lys	Asn	Thr	Asn	Glu 125	Asn	Thr	Asn
Asp	Ser 130	Ser	Phe	Thr	Tyr	Ser 135	Leu	Lys	Lys	Asp	Leu 140	Thr	Asp	Leu	Thr
Ser 145	Val	Glu	Thr	Glu	Lys 150	Leu	Ser	Phe	Gly	Ala 155	Asn	Gly	Asn	Lys	Val 160
Asn	Ile	Thr	Ser	Asp 165	Thr	Lys	Gly	Leu	Asn 170	Phe	Ala	Lys	Glu	Thr 175	Ala
Gly	Thr	Asn	Gly 180	Asp	Thr	Thr	Val	His 185	Leu	Asn	Gly	Ile	Gly 190	Ser	Thr
Leu	Thr 195	Asp	Thr	Leu	Leu	Asn	Thr 200	Gly	Ala	Thr	Thr	Asn 205	Val	Thr	Asn
Asp	Asn 210	Val	Thr	Asp	Asp	Lys 215	Lys	Lys	Arg	Ala	Ala 220	Ser	Val	Lys	Asp
Val 225	Leu	Asn	Ala	Gly	Trp 230	Asn	Ile	Lys	Gly	Val 235	Lys	Pro	Gly	Thr	Thr 240
Ala	Ser	Asp	Asn	Val 245	Asp	Phe	Val	His	Thr 250	Tyr	Asp	Thr	Val	Glu 255	Phe
Leu	Ser	Ala	Asp 260	Thr	Lys	Thr	Thr 265	Thr	Val	Asn	Val	Glu	Ser 270	Lys	Asp
Asn	Gly 275	Lys	Arg	Thr	Glu	Val	Lys 280	Ile	Gly	Ala	Lys	Thr 285	Ser	Val	Ile
Lys	Glu 290	Lys	Asp	Gly	Lys	Leu 295	Val	Thr	Gly	Lys	Gly 300	Lys	Gly	Glu	Asn
Gly 305	Ser	Ser	Thr	Asp	Glu 310	Gly	Glu	Gly	Leu	Val 315	Thr	Ala	Lys	Glu	Val 320
Ile	Asp	Ala	Val	Asn 325	Lys	Ala	Gly	Trp	Arg 330	Met	Lys	Thr	Thr	Thr 335	Ala
Asn	Gly	Gln	Thr 340	Gly	Gln	Ala	Asp	Lys 345	Phe	Glu	Thr	Val	Thr	Ser	Gly

Thr Asn Val Thr Phe Ala Ser Gly Lys Gly Thr Thr Ala Thr Val Ser
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Lys Asp Asp Gln Gly Asn Ile Thr Val Lys Tyr Asp Val Asn Val Gly
370 375 380

Asp Ala Leu Asn Val Asn Gln Leu Gln Asn Ser Gly Trp Asn Leu Asp
385 390 395 400

Ser Lys Ala Val Ala Gly Ser Ser Gly Lys Val Ile Ser Gly Asn Val
405 410 415

Ser Pro Ser Lys Gly Lys Met Asp Glu Thr Val Asn Ile Asn Ala Gly
420 425 430

Asn Asn Ile Glu Ile Thr Arg Asn Gly Lys Asn Ile Asp Ile Ala Thr
435 440 445

Ser Met Thr Pro Gln Phe Ser Ser Val Ser Leu Gly Ala Gly Ala Asp
450 455 460

Ala Pro Thr Leu Ser Val Asp Asp Lys Gly Ala Leu Asn Val Gly Ser
465 470 475 480

Lys Asp Ala Asn Lys Pro Val Arg Ile Thr Asn Val Ala Pro Gly Val
485 490 495

Lys Glu Gly Asp Val Thr Asn Val Ala Gln Leu Lys Gly Val Ala Gln
500 505 510

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515 520 525

Ile Ala Gln Ala Ile Ala Thr Ala Gly Leu Val Gln Ala Tyr Leu Pro
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Gly Lys Ser Met Met Ala Ile Gly Gly Gly Thr Tyr Arg Gly Glu Ala
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Gly Tyr Ala Ile Gly Tyr Ser Ser Ile Ser Asp Gly Gly Asn Trp Ile
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Ala Ser Val Gly Tyr Gln Trp
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<213> Neisseria meningitidis

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Val Val Val Ser Glu Leu Thr Arg Asn His Thr Lys Arg Ala Ser Ala	20	25	30
Thr Val Ala Thr Ala Val Leu Ala Thr Leu Leu Phe Ala Thr Val Gln	35	40	45
Ala Asn Ala Thr Asp Asp Asp Asp Leu Tyr Leu Glu Pro Val Gln Arg	50	55	60
Thr Ala Val Val Leu Ser Phe Arg Ser Asp Lys Glu Gly Thr Gly Glu	65	70	75
Lys Glu Gly Thr Glu Asp Ser Asn Trp Ala Val Tyr Phe Asp Glu Lys	85	90	95
Arg Val Leu Lys Ala Gly Ala Ile Thr Leu Lys Ala Gly Asp Asn Leu	100	105	110
Lys Ile Lys Gln Asn Thr Asn Glu Asn Thr Asn Glu Asn Thr Asn Asp	115	120	125
Ser Ser Phe Thr Tyr Ser Leu Lys Lys Asp Leu Thr Asp Leu Thr Ser	130	135	140
Val Glu Thr Glu Lys Leu Ser Phe Gly Ala Asn Gly Asn Lys Val Asn	145	150	155
Ile Thr Ser Asp Thr Lys Gly Leu Asn Phe Ala Lys Glu Thr Ala Gly	165	170	175
Thr Asn Gly Asp Pro Thr Val His Leu Asn Gly Ile Gly Ser Thr Leu	180	185	190
Thr Asp Thr Leu Leu Asn Thr Gly Ala Thr Thr Asn Val Thr Asn Asp	195	200	205
Asn Val Thr Asp Asp Glu Lys Lys Arg Ala Ala Ser Val Lys Asp Val	210	215	220
Leu Asn Ala Gly Trp Asn Ile Lys Gly Val Lys Pro Gly Thr Thr Ala	225	230	235
Ser Asp Asn Val Asp Phe Val Arg Thr Tyr Asp Thr Val Glu Phe Leu	245	250	255
Ser Ala Asp Thr Lys Thr Thr Thr Val Asn Val Glu Ser Lys Asp Asn	260	265	270
Gly Lys Lys Thr Glu Val Lys Ile Gly Ala Lys Thr Ser Val Ile Lys	275	280	285
Glu Lys Asp Gly Lys Leu Val Thr Gly Lys Gly Lys Asp Glu Asn Gly	290	295	300
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097181001

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Lys Val Thr Phe Ala Ser Gly Asn Gly Thr Thr Ala Thr Val Ser Lys						
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Asp Asp Gln Gly Asn Ile Thr Val Lys Tyr Asp Val Asn Val Gly Asp						
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Ala Leu Asn Val Asn Gln Leu Gln Asn Ser Gly Trp Asn Leu Asp Ser						
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Lys Ala Val Ala Gly Ser Ser Gly Lys Val Ile Ser Gly Asn Val Ser						
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Pro Ser Lys Gly Lys Met Asp Glu Thr Val Asn Ile Asn Ala Gly Asn						
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Asn Ile Glu Ile Thr Arg Asn Gly Lys Asn Ile Asp Ile Ala Thr Ser						
	435			440		445
Met Thr Pro Gln Phe Ser Ser Val Ser Leu Gly Ala Gly Ala Asp Ala						
	450			455		460
Pro Thr Leu Ser Val Asp Asp Glu Gly Ala Leu Asn Val Gly Ser Lys						
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Asp Ala Asn Lys Pro Val Arg Ile Thr Asn Val Ala Pro Gly Val Lys						
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Leu Asn Asn Arg Ile Asp Asn Val Asp Gly Asn Ala Arg Ala Gly Ile						
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Ala Gln Ala Ile Ala Thr Ala Gly Leu Ala Gln Ala Tyr Leu Pro Gly						
	530			535		540
Lys Ser Met Met Ala Ile Gly Gly Gly Thr Tyr Arg Gly Glu Ala Gly						
	545			550		555
Tyr Ala Ile Gly Tyr Ser Ser Ile Ser Asp Thr Gly Asn Trp Val Ile						
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Ser Val Gly Tyr Gln Trp						
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 <212> PRT
 <213> Neisseria meningitidis

<400> 8

Met	Asn	Lys	Ile	Ser	Arg	Ile	Ile	Trp	Asn	Ser	Ala	Leu	Asn	Ala	Trp	1	5	10	15
Val	Val	Val	Ser	Glu	Leu	Thr	Arg	Asn	His	Thr	Lys	Arg	Ala	Ser	Ala	20	25	30	
Thr	Val	Ala	Thr	Ala	Val	Leu	Ala	Thr	Leu	Leu	Phe	Ala	Thr	Val	Gln	35	40	45	
Ala	Asn	Ala	Thr	Asp	Asp	Asp	Asp	Leu	Tyr	Leu	Glu	Pro	Val	Gln	Arg	50	55	60	
Thr	Ala	Val	Val	Leu	Ser	Phe	Arg	Ser	Asp	Lys	Glu	Gly	Thr	Gly	Glu	65	70	75	80
Lys	Glu	Gly	Thr	Glu	Asp	Ser	Asn	Trp	Ala	Val	Tyr	Phe	Asp	Glu	Lys	85	90	95	
Arg	Val	Leu	Lys	Ala	Gly	Ala	Ile	Thr	Leu	Lys	Ala	Gly	Asp	Asn	Leu	100	105	110	
Lys	Ile	Lys	Gln	Asn	Thr	Asn	Glu	Asn	Thr	Asn	Glu	Asn	Thr	Asn	Asp	115	120	125	
Ser	Ser	Phe	Thr	Tyr	Ser	Leu	Lys	Lys	Asp	Leu	Thr	Asp	Leu	Thr	Ser	130	135	140	
Val	Glu	Thr	Glu	Lys	Leu	Ser	Phe	Gly	Ala	Asn	Gly	Asn	Lys	Val	Asn	145	150	155	160
Ile	Thr	Ser	Asp	Thr	Lys	Gly	Leu	Asn	Phe	Ala	Lys	Glu	Thr	Ala	Gly	165	170	175	
Thr	Asn	Gly	Asp	Pro	Thr	Val	His	Leu	Asn	Gly	Ile	Gly	Ser	Thr	Leu	180	185	190	
Thr	Asp	Thr	Leu	Leu	Asn	Thr	Gly	Ala	Thr	Thr	Asn	Val	Thr	Asn	Asp	195	200	205	
Asn	Val	Thr	Asp	Asp	Glu	Lys	Lys	Arg	Ala	Ala	Ser	Val	Lys	Asp	Val	210	215	220	
Leu	Asn	Ala	Gly	Trp	Asn	Ile	Lys	Gly	Val	Lys	Pro	Gly	Thr	Thr	Ala	225	230	235	240
Ser	Asp	Asn	Val	Asp	Phe	Val	Arg	Thr	Tyr	Asp	Thr	Val	Glu	Phe	Leu	245	250	255	
Ser	Ala	Asp	Thr	Lys	Thr	Thr	Thr	Val	Asn	Val	Glu	Ser	Lys	Asp	Asn	260	265	270	

Gly Lys Arg Thr Glu Val Lys Ile Gly Ala Lys Thr Ser Val Ile Lys
 275 280 285
 Glu Lys Asp Gly Lys Leu Val Thr Gly Lys Gly Lys Gly Glu Asn Gly
 290 295 300
 Ser Ser Thr Asp Glu Gly Glu Gly Leu Val Thr Ala Lys Glu Val Ile
 305 310 315 320
 Asp Ala Val Asn Lys Ala Gly Trp Arg Met Lys Thr Thr Thr Ala Asn
 325 330 335
 Gly Gln Thr Gly Gln Ala Asp Lys Phe Glu Thr Val Thr Ser Gly Thr
 340 345 350
 Lys Val Thr Phe Ala Ser Gly Asn Gly Thr Thr Ala Thr Val Ser Lys
 355 360 365
 Asp Asp Gln Gly Asn Ile Thr Val Lys Tyr Asp Val Asn Val Gly Asp
 370 375 380
 Ala Leu Asn Val Asn Gln Leu Gln Asn Ser Gly Trp Asn Leu Asp Ser
 385 390 395 400
 Lys Ala Val Ala Gly Ser Ser Gly Lys Val Ile Ser Gly Asn Val Ser
 405 410 415
 Pro Ser Lys Gly Lys Met Asp Glu Thr Val Asn Ile Asn Ala Gly Asn
 420 425 430
 Asn Ile Glu Ile Thr Arg Asn Gly Lys Asn Ile Asp Ile Ala Thr Ser
 435 440 445
 Met Thr Pro Gln Phe Ser Ser Val Ser Leu Gly Ala Gly Ala Asp Ala
 450 455 460
 Pro Thr Leu Ser Val Asp Asp Glu Gly Ala Leu Asn Val Gly Ser Lys
 465 470 475 480
 Asp Ala Asn Lys Pro Val Arg Ile Thr Asn Val Ala Pro Gly Val Lys
 485 490 495
 Glu Gly Asp Val Thr Asn Val Ala Gln Leu Lys Gly Val Ala Gln Asn
 500 505 510
 Leu Asn Asn Arg Ile Asp Asn Val Asp Gly Asn Ala Arg Ala Gly Ile
 515 520 525
 Ala Gln Ala Ile Ala Thr Ala Gly Leu Ala Gln Ala Tyr Leu Pro Gly
 530 535 540
 Lys Ser Met Met Ala Ile Gly Gly Gly Thr Tyr Arg Gly Glu Ala Gly
 545 550 555 560
 Tyr Ala Ile Gly Tyr Ser Ser Ile Ser Asp Thr Gly Asn Trp Val Ile
 565 570 575

Lys Gly Thr Ala Ser Gly Asn Ser Arg Gly His Phe Gly Thr Ser Ala
 580 585 590

Ser Val Gly Tyr Gln Trp
 595

<210> 9

<211> 594

<212> PRT

<213> Neisseria meningitidis

<400> 9

Met Asn Lys Ile Tyr Arg Ile Ile Trp Asn Ser Ala Leu Asn Ala Trp
 1 5 10 15

Val Val Val Ser Glu Leu Thr Arg Asn His Thr Lys Arg Ala Ser Ala
 20 25 30

Thr Val Ala Thr Ala Val Leu Ala Thr Leu Leu Phe Ala Thr Val Gln
 35 40 45

Ala Asn Ala Thr Asp Asp Asp Asp Leu Tyr Leu Glu Pro Val Gln Arg
 50 55 60

Thr Ala Val Val Leu Ser Phe Arg Ser Asp Lys Glu Gly Thr Gly Glu
 65 70 75 80

Lys Glu Gly Thr Glu Asp Ser Asn Trp Ala Val Tyr Phe Asp Glu Lys
 85 90 95

Arg Val Leu Lys Ala Gly Ala Ile Thr Leu Lys Ala Gly Asp Asn Leu
 100 105 110

Lys Ile Lys Gln Asn Thr Asn Glu Asn Thr Asn Asp Ser Ser Phe Thr
 115 120 125

Tyr Ser Leu Lys Lys Asp Leu Thr Asp Leu Thr Ser Val Glu Thr Glu
 130 135 140

Lys Leu Ser Phe Gly Ala Asn Gly Asn Lys Val Asn Ile Thr Ser Asp
 145 150 155 160

Thr Lys Gly Leu Asn Phe Ala Lys Glu Thr Ala Gly Thr Asn Gly Asp
 165 170 175

Pro Thr Val His Leu Asn Gly Ile Gly Ser Thr Leu Thr Asp Thr Leu
 180 185 190

Leu Asn Thr Gly Ala Thr Thr Asn Val Thr Asn Asp Asn Val Thr Asp
 195 200 205

Asp Glu Lys Lys Arg Ala Ala Ser Val Lys Asp Val Leu Asn Ala Gly
 210 215 220

Trp Asn Ile Lys Gly Val Lys Pro Gly Thr Thr Ala Ser Asp Asn Val
 225 230 235 240

Asp Phe Val Arg Thr Tyr Asp Thr Val Glu Phe Leu Ser Ala Asp Thr
 245 250 255
 Lys Thr Thr Thr Val Asn Val Glu Ser Lys Asp Asn Gly Lys Lys Thr
 260 265 270
 Glu Val Lys Ile Gly Ala Lys Thr Ser Val Ile Lys Glu Lys Asp Gly
 275 280 285
 Lys Leu Val Thr Gly Lys Gly Lys Asp Glu Asn Gly Ser Ser Thr Asp
 290 295 300
 Glu Gly Glu Gly Leu Val Thr Ala Lys Glu Val Ile Asp Ala Val Asn
 305 310 315 320
 Lys Ala Gly Trp Arg Met Lys Thr Thr Thr Ala Asn Gly Gln Thr Gly
 325 330 335
 Gln Ala Asp Lys Phe Glu Thr Val Thr Ser Gly Thr Asn Val Thr Phe
 340 345 350
 Ala Ser Gly Lys Gly Thr Thr Ala Thr Val Ser Lys Asp Asp Gln Gly
 355 360 365
 Asn Ile Thr Val Lys Tyr Asp Val Asn Val Gly Asp Ala Leu Asn Val
 370 375 380
 Asn Gln Leu Gln Asn Ser Gly Trp Asn Leu Asp Ser Lys Ala Val Ala
 385 390 395 400
 Gly Ser Ser Gly Lys Val Ile Ser Gly Asn Val Ser Pro Ser Lys Gly
 405 410 415
 Lys Met Asp Glu Thr Val Asn Ile Asn Ala Gly Asn Asn Ile Glu Ile
 420 425 430
 Thr Arg Asn Gly Lys Asn Ile Asp Ile Ala Thr Ser Met Ala Pro Gln
 435 440 445
 Phe Ser Ser Val Ser Leu Gly Ala Gly Ala Asp Ala Pro Thr Leu Ser
 450 455 460
 Val Asp Asp Glu Gly Ala Leu Asn Val Gly Ser Lys Asp Thr Asn Lys
 465 470 475 480
 Pro Val Arg Ile Thr Asn Val Ala Pro Gly Val Lys Glu Gly Asp Val
 485 490 495
 Thr Asn Val Ala Gln Leu Lys Gly Val Ala Gln Asn Leu Asn Asn Arg
 500 505 510
 Ile Asp Asn Val Asp Gly Asn Ala Arg Ala Gly Ile Ala Gln Ala Ile
 515 520 525
 Ala Thr Ala Gly Leu Val Gln Ala Tyr Leu Pro Gly Lys Ser Met Met
 530 535 540

Ala Ile Gly Gly Asp Thr Tyr Arg Gly Glu Ala Gly Tyr Ala Ile Gly
545 550 555 560

Tyr Ser Ser Ile Ser Asp Gly Gly Asn Trp Ile Ile Lys Gly Thr Ala
565 570 575

Ser Gly Asn Ser Arg Gly His Phe Gly Ala Ser Ala Ser Val Gly Tyr
580 585 590

Gln Trp

<210> 10

<211> 592

<212> PRT

<213> Neisseria meningitidis

<400> 10

Met Asn Lys Ile Tyr Arg Ile Ile Trp Asn Ser Ala Leu Asn Ala Trp
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Val Ala Val Ser Glu Leu Thr Arg Asn His Thr Lys Arg Ala Ser Ala
20 25 30

Thr Val Lys Thr Ala Val Leu Ala Thr Leu Leu Phe Ala Thr Val Gln
35 40 45

Ala Asn Ala Thr Asp Glu Asp Glu Glu Glu Glu Leu Glu Ser Val Gln
50 55 60

Arg Ser Val Val Gly Ser Ile Gln Ala Ser Met Glu Gly Ser Gly Glu
65 70 75 80

Leu Glu Thr Ile Ser Leu Ser Met Thr Asn Asp Ser Lys Glu Phe Val
85 90 95

Asp Pro Tyr Ile Val Val Thr Leu Lys Ala Gly Asp Asn Leu Lys Ile
100 105 110

Lys Gln Asn Thr Asn Glu Asn Thr Asn Ala Ser Ser Phe Thr Tyr Ser
115 120 125

Leu Lys Lys Asp Leu Thr Gly Leu Ile Asn Val Glu Thr Glu Lys Leu
130 135 140

Ser Phe Gly Ala Asn Gly Lys Lys Val Asn Ile Ile Ser Asp Thr Lys
145 150 155 160

Gly Leu Asn Phe Ala Lys Glu Thr Ala Gly Thr Asn Gly Asp Thr Thr
165 170 175

Val His Leu Asn Gly Ile Gly Ser Thr Leu Thr Asp Thr Leu Ala Gly
180 185 190

Ser Ser Ala Ser His Val Asp Ala Gly Asn Gln Ser Thr His Tyr Thr

Xaa	Leu	Xaa	Xaa	Val	Xaa	Thr	Glu	Lys	Leu	Ser	Phe	Xaa	Ala	Asn	Xaa
145					150					155					160
Xaa	Lys	Val	Asn	Ile	Xaa	Ser	Asp	Thr	Lys	Gly	Leu	Asn	Phe	Ala	Lys
				165					170					175	
Xaa	Thr	Ala	Xaa	Thr	Asn	Gly	Asp	Xaa	Thr	Val	His	Leu	Asn	Gly	Ile
			180					185					190		
Gly	Ser	Thr	Leu	Thr	Asp	Xaa	Leu	Xaa	Xaa	Xaa	Xaa	Ala	Xaa	Xaa	Xaa
	195					200						205			
Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Thr	Xaa	Xaa	Xaa	Xaa	Xaa	Arg	Ala	Ala	Ser
	210					215					220				
Xaa	Lys	Asp	Val	Leu	Asn	Ala	Gly	Trp	Asn	Ile	Lys	Gly	Val	Lys	Xaa
225					230					235					240
Gly	Xaa	Thr	Xaa	Xaa	Xaa	Xaa	Xaa	Asn	Val	Asp	Phe	Val	Xaa	Thr	Tyr
			245					250						255	
Asp	Thr	Val	Glu	Phe	Leu	Ser	Ala	Asp	Thr	Lys	Thr	Thr	Thr	Val	Asn
		260						265						270	
Val	Glu	Ser	Lys	Asp	Asn	Gly	Lys	Xaa	Thr	Glu	Val	Lys	Ile	Gly	Ala
	275						280					285			
Lys	Thr	Ser	Val	Ile	Lys	Glu	Lys	Asp	Gly	Lys	Leu	Val	Thr	Gly	Lys
	290					295					300				
Xaa	Lys	Xaa	Glu	Asn	Xaa	Ser	Ser	Thr	Asp	Xaa	Gly	Glu	Gly	Leu	Val
305				310						315					320
Thr	Ala	Lys	Glu	Val	Ile	Asp	Ala	Val	Asn	Lys	Ala	Gly	Trp	Arg	Met
			325						330					335	
Lys	Thr	Thr	Thr	Ala	Asn	Gly	Gln	Thr	Gly	Gln	Ala	Asp	Lys	Phe	Glu
			340					345					350		
Thr	Val	Thr	Ser	Gly	Thr	Xaa	Val	Thr	Phe	Ala	Ser	Gly	Xaa	Gly	Thr
		355					360					365			
Thr	Ala	Thr	Val	Ser	Lys	Asp	Asp	Gln	Gly	Asn	Ile	Thr	Val	Xaa	Tyr
	370					375					380				
Asp	Val	Asn	Val	Gly	Asp	Ala	Leu	Asn	Val	Asn	Gln	Leu	Gln	Asn	Ser
385				390						395					400
Gly	Trp	Asn	Leu	Asp	Ser	Lys	Ala	Val	Ala	Gly	Ser	Ser	Gly	Lys	Val
				405					410					415	
Ile	Ser	Gly	Asn	Val	Ser	Pro	Ser	Lys	Gly	Lys	Met	Asp	Glu	Thr	Val
			420					425					430		
Asn	Ile	Asn	Ala	Gly	Asn	Asn	Ile	Glu	Ile	Xaa	Arg	Asn	Gly	Lys	Asn
	435						440						445		

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<210> 13
<211> 1779
<212> DNA
<213> *Neisseria meningitidis*

<400> 13
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acactgttgt ttgcaacggt tcaggcgaat gctaccgatg aagatgaaga agaagagtta 180
gaatccgtac aacgctctgt cgtagggagc attcaagcca gtatggaagg cagcgtcgaa 240
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gtagttaccc tcaaagccgg cgacaacctg aaaatcaaac aaaacaccaa tgaaaacacc 360

aatgccagta gcttcaccta ctogctgaaa aaagacctca caggcctgat caatgttgaa 420
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<210> 14
 <211> 1770
 <212> DNA
 <213> Neisseria meningitidis

<400> 14
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acactgctgt	ccgcaacggg	tcaggcgaat	gctaccgata	ccgatgaaga	tgaagagtta	180
gaatccgtag	cacgctctgc	tctggtgttg	caattcatga	tcgataaaga	aggcaatgga	240
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cacggcgcaa	ccgttaccct	caaagccggc	gacaacctga	aatcaaaca	aagcggcaaa	360
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agtacacatt	acactcgctg	agcaagtatt	aaggatgtgt	tgaatgcggg	ttggaatatt	660
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atgaaaacia	caaccgctaa	tggtcaaaca	ggtcaagctg	acaagtttga	aaccgttaca	1020
tcaggcacaa	aagtaacctt	tgctagtggg	aatggtacia	ctgcgactgt	aagtaaagat	1080
gatcaaggca	acatcactgt	taagtatgat	gtaaatgtcg	gcgatgccct	aaacgtcaat	1140
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gtcatcagcg	gcaatgtttc	gccgagcaag	ggaaagatgg	atgaaaccgt	caacattaat	1260
gccggcaaca	acatcgagat	taccgcgaac	ggcaaaaata	tcgacatcgc	cacttcgatg	1320
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aatgtcgccc	cgggcgttaa	agagggggat	gttacaaacg	tcgcacaact	taaaggtgtg	1500
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caagcgattg	caaccgcagg	tttggtcag	gcctatttgc	ccggcaagag	tatgatggcg	1620
atcggcggcg	gtacttatct	cggcgaagcc	ggttacgcc	tcggctactc	gagcatttct	1680
gacactggga	attgggttat	caagggcacg	gcttcggca	attcgcgcgc	tcatttcggt	1740

acttccgcac ctgtcgggta tcagtggtaa

1770

<210> 15

<211> 1785

<212> DNA

<213> *Neisseria meningitidis*

<400> 15

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acactgttgt ttgcaacggt tcaggcgagt actaccgatg acgacgattt atatttagaa	180
cccgtacaac gcaactgctgt cgtgttgagc ttccgttccg ataaagaagg cacgggagaa	240
aaagaagtta cagaagattc aaattgggga gtatatctcg acaagaaagg agtactaaca	300
gccggaacaa tcaccctcaa agccggcgac aacctgaaaa tcaaacaaaa caccaatgaa	360
aacaccaatg ccagtagctt cacctactcg ctgaaaaaag acctcacaga tctgaccagt	420
gttggaaactg aaaaattatc gtttagcgca aacagcaata aagtcaacat cacaagcgac	480
accaaaggct tgaatttcgc gaaaaaacg gctgagacca acggcgacac cacggttcat	540
ctgaacggta tcggttcgac tttgaccgat acgtgctga ataccggagc gaccacaaac	600
gtaaccaacg acaacgttac cgatgacgag aaaaaacgtg cggcaagcgt taaagacgta	660
ttaaacgcag gctggaacat taaaggcgtt aaaccgcgta caacagcttc cgataacgtt	720
gatttcgtcc gcacttacga cacagtcgag ttcttgagcg cagatacga aacaacgact	780
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tttgaaaccg ttacatcagg cacaaatgta acctttgcta gtggtaaagg tacaactgcg	1080
actgtaagta aagatgatca aggcaacatc actgttatgt atgatgtaaa tgcggcgat	1140
gccctaaacg tcaatcagct gcaaaacagc gggttgaatt tggattccaa agcggttgca	1200
ggttcttcg gcaaagtcac cagcggcaat gtttcgccga gcaagggaaa gatggatgaa	1260
accgtcaaca ttaatgccgg caacaacatc gagattacc gcaacggcaa aatatcgac	1320
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cccactttaa gcgtggatga cgaggcgcg ttgaatgtcg gcagcaagga tgccaacaaa	1440

cccgtccgca ttaccaatgt cgccccgggc gttaaagagg gggatgttac aaacgtcgca 1500
 caacttaaag gcgtggcgca aaacttgaac aaccacatcg acaatgtgga cggcaacgcg 1560
 cgtgcgggca tcgccaagc gattgcaacc gcaggtctgg ttcaggcgta tctgcccggc 1620
 aagagtatga tggcgatcgg cggcggcact tatcgcggcg aagccgggta tgccatcggc 1680
 tactcaagca tttccgacgg cggaaattgg attatcaaag gcacggcttc cggcaattcg 1740
 cgcggccatt tcggtgcttc cgcattctgtc ggttatcagt ggtaa 1785

<210> 16
 <211> 1776
 <212> DNA
 <213> Neisseria meningitidis

<400> 16
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 actctgttgt ttgcaacggc tcaggcaagt gctaacaatg aagagcaaga agaagattta 180
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GenBank accession number: F01450

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<210> 17
<211> 1800
<212> DNA
<213> Neisseria meningitidis

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<212> DNA
<213> *Neisseria meningitidis*

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<210> 19
<211> 1797
<212> DNA
<213> Neisseria meningitidis

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aactgttgt ttgcaacggg tcaggcgaat gctaccgatg acgacgattt atatttagaa     180
cccgtaaac gcactgctgt cgtgttgagc ttccgttccg ataaagaagg cacgggagaa     240

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aaagaaggta cagaagattc aaattgggca gtatatattcg acgagaaaag agtactaaaa 300
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gatctgacca gtgttgaaac tgaaaaatta tcgtttggcg caaacggtaa taaagtcaac 480
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<210> 20

<211> 1785

<212> DNA

<213> Neisseria meningitidis

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<210> 21
<211> 1779
<212> DNA
<213> *Neisseria meningitidis*

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Asn	Thr	Gly	Ala	Thr	Thr	Asn	Val	Thr	Asn	Asp	Asn	Val	Thr	Asp	Asp				
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Glu	Lys	Lys	Arg	Ala	Ala	Ser	Val	Lys	Asp	Val	Leu	Asn	Ala	Gly	Trp				
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Leu	Val	Thr	Gly	Lys	Asp	Lys	Gly	Glu	Asn	Gly	Ser	Ser	Thr	Asp	Glu				
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Ile	Thr	Val	Met	Tyr	Asp	Val	Asn	Val	Gly	Asp	Ala	Leu	Asn	Val	Asn				
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Arg	Asn	Gly	Lys	Asn	Ile	Asp	Ile	Ala	Thr	Ser	Met	Thr	Pro	Gln	Phe				
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Ser	Ser	Val	Ser	Leu	Gly	Ala	Gly	Ala	Asp	Ala	Pro	Thr	Leu	Ser	Val				
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Arg Ile Thr Asn Val Ala Pro Gly Val Lys Glu Gly Asp Val Thr Asn
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Val Ala Gln Leu Lys Gly Val Ala Gln Asn Leu Asn Asn Arg Ile Asp
420 425 430

Asn Val Asp Gly Asn Ala Arg Ala Gly Ile Ala Gln Ala Ile Ala Thr
435 440 445

Ala Gly Leu Val Gln Ala Tyr Leu Pro Gly Lys Ser Met Met Ala Ile
450 455 460

Gly Gly Gly Thr Tyr Arg Gly Glu Ala Gly Tyr Ala Ile Gly Tyr Ser
465 470 475 480

Ser Ile Ser Asp Gly Gly Asn Trp Ile Ile Lys Gly Thr Ala Ser Gly
485 490 495

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<210> 24
<211> 513
<212> PRT
<213> Neisseria meningitidis

<400> 24

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35 40 45

Ala Asn Ala Thr Asp Glu Thr Gly Leu Ile Asn Val Glu Thr Glu Lys
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Leu Ser Phe Gly Ala Asn Gly Lys Lys Val Asn Ile Ile Ser Asp Thr
65 70 75 80

Lys Gly Leu Asn Phe Ala Lys Glu Thr Ala Gly Thr Asn Gly Asp Thr
85 90 95

Thr Val His Leu Asn Gly Ile Gly Ser Thr Leu Thr Asp Met Leu Leu
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Asn Thr Gly Ala Thr Thr Asn Val Thr Asn Asp Asn Val Thr Asp Asp
115 120 125

Glu Lys Lys Arg Ala Ala Ser Val Lys Asp Val Leu Asn Ala Gly Trp
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Asn Ile Lys Gly Val Lys Pro Gly Thr Thr Ala Ser Asp Asn Val Asp
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 Phe Val Arg Thr Tyr Asp Thr Val Glu Phe Leu Ser Ala Asp Thr Lys
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 275 280 285
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 385 390 395 400
 Val Arg Ile Thr Asn Val Ala Pro Gly Val Lys Glu Gly Asp Val Thr
 405 410 415
 Asn Val Ala Gln Leu Lys Gly Val Ala Gln Asn Leu Asn Asn Arg Ile
 420 425 430
 Asp Asn Val Asn Gly Asn Ala Arg Ala Gly Ile Ala Gln Ala Ile Ala
 435 440 445

Thr Ala Gly Leu Val Gln Ala Tyr Leu Pro Gly Lys Ser Met Met Ala
 450 455 460

Ile Gly Gly Gly Thr Tyr Leu Gly Glu Ala Gly Tyr Ala Ile Gly Tyr
 465 470 475 480

Ser Ser Ile Ser Ala Gly Gly Asn Trp Ile Ile Lys Gly Thr Ala Ser
 485 490 495

Gly Asn Ser Arg Gly His Phe Gly Ala Ser Ala Ser Val Gly Tyr Gln
 500 505 510

Trp

<210> 25

<211> 407

<212> PRT

<213> Neisseria meningitidis

<400> 25

Met Asn Lys Ile Tyr Arg Ile Ile Trp Asn Ser Ala Leu Asn Ala Trp
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Val Val Val Ser Glu Leu Thr Arg Asn His Thr Lys Arg Ala Ser Ala
 20 25 30

Thr Val Lys Thr Ala Val Leu Ala Thr Leu Leu Phe Ala Thr Val Gln
 35 40 45

Ala Ser Ala Asn Asn Val Asp Phe Val Arg Thr Tyr Asp Thr Val Glu
 50 55 60

Phe Leu Ser Ala Asp Thr Lys Thr Thr Thr Val Asn Val Glu Ser Lys
 65 70 75 80

Asp Asn Gly Lys Lys Thr Glu Val Lys Ile Gly Ala Lys Thr Ser Val
 85 90 95

Ile Lys Glu Lys Asp Gly Lys Leu Val Thr Gly Lys Asp Lys Gly Glu
 100 105 110

Asn Gly Ser Ser Thr Asp Glu Gly Glu Gly Leu Val Thr Ala Lys Glu
 115 120 125

Val Ile Asp Ala Val Asn Lys Ala Gly Trp Arg Met Lys Thr Thr Thr
 130 135 140

Ala Asn Gly Gln Thr Gly Gln Ala Asp Lys Phe Glu Thr Val Thr Ser
 145 150 155 160

Gly Thr Asn Val Thr Phe Ala Ser Gly Lys Gly Thr Thr Ala Thr Val
 165 170 175

Ser Lys Asp Asp Gln Gly Asn Ile Thr Val Met Tyr Asp Val Asn Val
 180 185 190

Gly Asp Ala Leu Asn Val Asn Gln Leu Gln Asn Ser Gly Trp Asn Leu
195 200 205

Asp Ser Lys Ala Val Ala Gly Ser Ser Gly Lys Val Ile Ser Gly Asn
210 215 220

Val Ser Pro Ser Lys Gly Lys Met Asp Glu Thr Val Asn Ile Asn Ala
225 230 235 240

Gly Asn Asn Ile Glu Ile Thr Arg Asn Gly Lys Asn Ile Asp Ile Ala
245 250 255

Thr Ser Met Thr Pro Gln Phe Ser Ser Val Ser Leu Gly Ala Gly Ala
260 265 270

Asp Ala Pro Thr Leu Ser Val Asp Gly Asp Ala Leu Asn Val Gly Ser
275 280 285

Lys Lys Asp Asn Lys Pro Val Arg Ile Thr Asn Val Ala Pro Gly Val
290 295 300

Lys Glu Gly Asp Val Thr Asn Val Ala Gln Leu Lys Gly Val Ala Gln
305 310 315 320

Asn Leu Asn Asn Arg Ile Asp Asn Val Asp Gly Asn Ala Arg Ala Gly
325 330 335

Ile Ala Gln Ala Ile Ala Thr Ala Gly Leu Val Gln Ala Tyr Leu Pro
340 345 350

Gly Lys Ser Met Met Ala Ile Gly Gly Gly Thr Tyr Arg Gly Glu Ala
355 360 365

Gly Tyr Ala Ile Gly Tyr Ser Ser Ile Ser Asp Gly Gly Asn Trp Ile
370 375 380

Ile Lys Gly Thr Ala Ser Gly Asn Ser Arg Gly His Phe Gly Ala Ser
385 390 395 400

Ala Ser Val Gly Tyr Gln Trp
405

<210> 26
<211> 433
<212> PRT
<213> Neisseria meningitidis

<400> 26

Met Asn Lys Ile Tyr Arg Ile Ile Trp Asn Ser Ala Leu Asn Ala Trp
1 5 10 15

Val Val Val Ser Glu Leu Thr Arg Asn His Thr Lys Arg Ala Ser Ala
20 25 30

Thr Val Lys Thr Ala Val Leu Ala Thr Leu Leu Phe Ala Thr Val Gln

Ala	Ser	Ala	Asn	Arg	Ala	Ala	Ser	Val	Lys	Asp	Val	Leu	Asn	Ala	Gly
50						55					60				
Trp	Asn	Ile	Lys	Gly	Val	Lys	Pro	Gly	Thr	Thr	Ala	Ser	Asp	Asn	Val
65					70					75					80
Asp	Phe	Val	Arg	Thr	Tyr	Asp	Thr	Val	Glu	Phe	Leu	Ser	Ala	Asp	Thr
				85					90					95	
Lys	Thr	Thr	Thr	Val	Asn	Val	Glu	Ser	Lys	Asp	Asn	Gly	Lys	Lys	Thr
			100					105					110		
Glu	Val	Lys	Ile	Gly	Ala	Lys	Thr	Ser	Val	Ile	Lys	Glu	Lys	Asp	Gly
		115					120					125			
Lys	Leu	Val	Thr	Gly	Lys	Asp	Lys	Gly	Glu	Asn	Gly	Ser	Ser	Thr	Asp
	130					135					140				
Glu	Gly	Glu	Gly	Leu	Val	Thr	Ala	Lys	Glu	Val	Ile	Asp	Ala	Val	Asn
145					150					155					160
Lys	Ala	Gly	Trp	Arg	Met	Lys	Thr	Thr	Thr	Ala	Asn	Gly	Gln	Thr	Gly
				165					170					175	
Gln	Ala	Asp	Lys	Phe	Glu	Thr	Val	Thr	Ser	Gly	Thr	Asn	Val	Thr	Phe
			180					185					190		
Ala	Ser	Gly	Lys	Gly	Thr	Thr	Ala	Thr	Val	Ser	Lys	Asp	Asp	Gln	Gly
		195					200					205			
Asn	Ile	Thr	Val	Met	Tyr	Asp	Val	Asn	Val	Gly	Asp	Ala	Leu	Asn	Val
	210					215					220				
Asn	Gln	Leu	Gln	Asn	Ser	Gly	Trp	Asn	Leu	Asp	Ser	Lys	Ala	Val	Ala
225					230					235					240
Gly	Ser	Ser	Gly	Lys	Val	Ile	Ser	Gly	Asn	Val	Ser	Pro	Ser	Lys	Gly
			245						250					255	
Lys	Met	Asp	Glu	Thr	Val	Asn	Ile	Asn	Ala	Gly	Asn	Asn	Ile	Glu	Ile
			260					265					270		
Thr	Arg	Asn	Gly	Lys	Asn	Ile	Asp	Ile	Ala	Thr	Ser	Met	Thr	Pro	Gln
		275					280					285			
Phe	Ser	Ser	Val	Ser	Leu	Gly	Ala	Gly	Ala	Asp	Ala	Pro	Thr	Leu	Ser
		290				295					300				
Val	Asp	Gly	Asp	Ala	Leu	Asn	Val	Gly	Ser	Lys	Lys	Asp	Asn	Lys	Pro
305					310					315					320
Val	Arg	Ile	Thr	Asn	Val	Ala	Pro	Gly	Val	Lys	Glu	Gly	Asp	Val	Thr
				325					330					335	
Asn	Val	Ala	Gln	Leu	Lys	Gly	Val	Ala	Gln	Asn	Leu	Asn	Asn	Arg	Ile

340	345	350
Asp Asn Val Asp Gly Asn Ala Arg Ala Gly Ile Ala Gln Ala Ile Ala		
355	360	365
Thr Ala Gly Leu Val Gln Ala Tyr Leu Pro Gly Lys Ser Met Met Ala		
370	375	380
Ile Gly Gly Gly Thr Tyr Arg Gly Glu Ala Gly Tyr Ala Ile Gly Tyr		
385	390	395
Ser Ser Ile Ser Asp Gly Gly Asn Trp Ile Ile Lys Gly Thr Ala Ser		
405	410	415
Gly Asn Ser Arg Gly His Phe Gly Ala Ser Ala Ser Val Gly Tyr Gln		
420	425	430

Trp

<210> 27
 <211> 502
 <212> PRT
 <213> Neisseria meningitidis
 <400> 27

Met Asn Lys Ile Tyr Arg Ile Ile Trp Asn Ser Ala Leu Asn Ala Trp		
1	5	10
Val Val Val Ser Glu Leu Thr Arg Asn His Thr Lys Arg Ala Ser Ala		
20	25	30
Thr Val Lys Thr Ala Val Leu Ala Thr Leu Leu Phe Ala Thr Val Gln		
35	40	45
Ala Ser Ala Asn Thr Leu Lys Ala Gly Asp Asn Leu Lys Ile Lys Gln		
50	55	60
Phe Thr Tyr Ser Leu Lys Lys Asp Leu Thr Asp Leu Thr Ser Val Gly		
65	70	75
Thr Glu Lys Leu Ser Phe Ser Ala Asn Gly Asn Lys Val Asn Ile Thr		
85	90	95
Ser Asp Thr Lys Gly Leu Asn Phe Ala Lys Glu Thr Ala Gly Thr Asn		
100	105	110
Gly Asp Thr Thr Val His Leu Asn Gly Ile Gly Ser Thr Leu Thr Asp		
115	120	125
Arg Ala Ala Ser Val Lys Asp Val Leu Asn Ala Gly Trp Asn Ile Lys		
130	135	140
Gly Val Lys Asn Val Asp Phe Val Arg Thr Tyr Asp Thr Val Glu Phe		
145	150	155
		160

Leu Ser Ala Asp Thr Lys Thr Thr Thr Val Asn Val Glu Ser Lys Asp
 165 170 175
 Asn Gly Lys Lys Thr Glu Val Lys Ile Gly Ala Lys Thr Ser Val Ile
 180 185 190
 Lys Glu Lys Asp Gly Lys Leu Val Thr Gly Lys Asp Lys Gly Glu Asn
 195 200 205
 Gly Ser Ser Thr Asp Glu Gly Glu Gly Leu Val Thr Ala Lys Glu Val
 210 215 220
 Ile Asp Ala Val Asn Lys Ala Gly Trp Arg Met Lys Thr Thr Thr Ala
 225 230 235 240
 Asn Gly Gln Thr Gly Gln Ala Asp Lys Phe Glu Thr Val Thr Ser Gly
 245 250 255
 Thr Asn Val Thr Phe Ala Ser Gly Lys Gly Thr Thr Ala Thr Val Ser
 260 265 270
 Lys Asp Asp Gln Gly Asn Ile Thr Val Met Tyr Asp Val Asn Val Gly
 275 280 285
 Asp Ala Leu Asn Val Asn Gln Leu Gln Asn Ser Gly Trp Asn Leu Asp
 290 295 300
 Ser Lys Ala Val Ala Gly Ser Ser Gly Lys Val Ile Ser Gly Asn Val
 305 310 315 320
 Ser Pro Ser Lys Gly Lys Met Asp Glu Thr Val Asn Ile Asn Ala Gly
 325 330 335
 Asn Asn Ile Glu Ile Thr Arg Asn Gly Lys Asn Ile Asp Ile Ala Thr
 340 345 350
 Ser Met Thr Pro Gln Phe Ser Ser Val Ser Leu Gly Ala Gly Ala Asp
 355 360 365
 Ala Pro Thr Leu Ser Val Asp Gly Asp Ala Leu Asn Val Gly Ser Lys
 370 375 380
 Lys Asp Asn Lys Pro Val Arg Ile Thr Asn Val Ala Pro Gly Val Lys
 385 390 395 400
 Glu Gly Asp Val Thr Asn Val Ala Gln Leu Lys Gly Val Ala Gln Asn
 405 410 415
 Leu Asn Asn Arg Ile Asp Asn Val Asp Gly Asn Ala Arg Ala Gly Ile
 420 425 430
 Ala Gln Ala Ile Ala Thr Ala Gly Leu Val Gln Ala Tyr Leu Pro Gly
 435 440 445
 Lys Ser Met Met Ala Ile Gly Gly Gly Thr Tyr Arg Gly Glu Ala Gly
 450 455 460

Tyr Ala Ile Gly Tyr Ser Ser Ile Ser Asp Gly Gly Asn Trp Ile Ile
 465 470 475 480

Lys Gly Thr Ala Ser Gly Asn Ser Arg Gly His Phe Gly Ala Ser Ala
 485 490 495

Ser Val Gly Tyr Gln Trp
 500

<210> 28
 <211> 1539
 <212> DNA
 <213> Neisseria meningitidis

<400> 28
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 gagctcacac gcaaccacac caaacgcgcc tccgcaaccg tgaagaccgc cgtattggcg 120
 actctgttgt ttgcaacggc tcaggcaagt gctaacaatg aaacagatct gaccagtgtt 180
 ggaactgaaa aattatcggt tagcgcaaac ggcaataaag tcaacatcac aagcgacacc 240
 aaaggcttga attttgcgaa agaaacggct gggacgaacg gcgacaccac ggttcatctg 300
 aacggtattg gttcgacttt gaccgatacg ctgctgaata ccggagcgac cacaaacgta 360
 accaacgaca acgttaccga tgacgagaaa aaacgtgcgg caagcggtta agacgtatta 420
 aacgctggct ggaacattaa aggcgttaaa cccggtacaa cagcttcoga taacgttgat 480
 ttcgtccgca cttacgacac agtcgagttc ttgagcgcag atacgaaaac aacgactgtt 540
 aatgtggaag gcaaagacaa cggcaagaaa accgaagtta aaatcgggtgc gaagacttct 600
 gttattaaag aaaaagacgg taagttgggt actggtaaag acaaaggcga gaatggttct 660
 tctacagacg aaggcgaagg cttagtgtg gcaaaagaag tgattgatgc agtaaacaag 720
 gctggttgga gaatgaaaac aacaaccgct aatgggtcaaa cagggtcaagc tgacaagttt 780
 gaaaccgtta catcaggcac aaatgtaacc tttgctagtgt gtaaaggtag aactgcgact 840
 gtaagttaaag atgatcaagg caacatcact gttatgtatg atgtaaatgt cggcgatgcc 900
 ctaaacgtca atcagctgca aaacagcggc tgggaatttg attccaaagc ggttgcaggt 960
 tcttcgggca aagtcacag cggcaatgtt tcgccgagca agggaaagat ggatgaaacc 1020
 gtcaacatta atgccggcaa caacatcgag attaccgcga acggtaaaaa tatcgacatc 1080
 gccacttcga tgaccccgca gttttccagc gtttcgctcg gcgcgggggc ggatgcgccc 1140
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 cgcattacca atgtcgcccc gggcggttaa gagggggatg ttacaaacgt cgacaaactt 1260

aaaggcgtgg cgcaaaaactt gaacaaccgc atcgacaatg tggacggcaa cgcgcggtgcg 1320
ggcatcgccc aagcgattgc aaccgcaggt ctggttcagg cgtatttggc cggaagagt 1380
atgatggcga tggcgggcgg cacttatcgc gggaagccg gttacgccat cggtactcc 1440
agtatttccg acggcgga aa ttggattatc aaaggcacgg cttccggcaa ttcgcgcggc 1500
catttcggtg cttccgcac tgcggttat cagtggtaa 1539

<210> 29
<211> 1542
<212> DNA
<213> Neisseria meningitidis

<400> 29
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gagctcacac gcaaccacac caaacgcgcc tccgaaccg tgaagaccgc cgtattggcg 120
acactgttgt ttgcaacggt tcaggcgaat gctaccgatg aaacaggcct gatcaatggt 180
gaaactgaaa aattatcggt tggcgcaaac ggcaagaaag tcaacatcat aagcgacacc 240
aaaggcttga atttcgcgaa agaaacggct gggacgaacg gcgacaccac ggttcatctg 300
aacggtatcg gttcgacttt gaccgatatg ctgctgaata ccggagcgac cacaaacgta 360
accaacgaca acgttacga tgacgagaaa aaacgtgcgg caagcggttaa agacgtatta 420
aacgcaggct ggaacattaa aggcgttaaa cccgggtacaa cagcttccga taacgttgat 480
ttcgtccgca cttacgacac agtcgagttc ttgagcgag atacgaaaac aacgactgtt 540
aatgtgga aa gcaaagacaa cggcaagaaa accgaagtta aaatcggtgc gaagacttct 600
gttattaaag aaaaagacgg taagttggtt actggtaaag gcaaaggcga gaatggttct 660
tctacagacg aaggcgaagg cttagtgaact gcaaaagaag tgattgatgc agtaacaag 720
gctggttga gaatgaaaac aacaaccgct aatggtcaaa caggtaagc tgacaagttt 780
gaaaccgtta catcaggcac aaaagtaacc tttgctagtg gtaatggtac aactgcgact 840
gtaagtaaag atgatcaagg caacatcact gttaagtatg atgtaaagt cggcgatgcc 900
ctaaacgtca atcagctgca aaacagcggg ttgaatttgg attccaaagc ggttgcagg 960
tcttcgggca aagtcacag cggcaatgtt tcgccgagca agggaaagat ggatgaaacc 1020
gtcaacatta atgcgggcaa caacatcgag attaccgcga acggcaaaaa tatcgacac 1080
gccacttoga tgaccccgca attttccagc gtttcgctcg gcgcgggggc ggatgcgccc 1140
actttaagcg tggatgacga gggcgcggtt aatgtcggca gcaaggatgc caacaaacc 1200

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gtccgcatta ccaatgtgc cccgggggtt aaagaggggg atgttacaaa cgtcgcgcaa 1260
cttaaagggtg tggcgcaaaa cttgaacaac cgcacgcaca atgtgaacgg caacgcgcgt 1320
gcgggcatcg cccaagcgat tgcaaccgca ggtctggttc aggcgtatct gcccggaag 1380
agtatgatgg cgatcggcgg cggcacttat ctcggcgaag ccggttatgc catcggctac 1440
tcaagcattt ccgccggcgg aaattggatt atcaaaggca cggcttcgg caattcgcgc 1500
ggccatttcg gtgcttcgc atctgtcgg tatcagtgg aa 1542
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<210> 30
<211> 1224
<212> DNA
<213> Neisseria meningitidis
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<400> 30
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gagotcacac gcaaccacac caaacgcgcc tccgcaaccg tgaagaccgc cgtattggcg 120
actctgttgt ttgcaacggg tcaggcaagt gctaacaacg ttgatttcgt ccgcacttac 180
gacacagtcg agttcttgag cgcagatacg aaaacaacga ctgttaatgt ggaaagcaaa 240
gacaacggca agaaaaccga agttaaaatc ggtgcgaaga cttctgttat taaagaaaaa 300
gacggtaagt tggttactgg taaagacaaa ggcgagaatg gttcttctac agacgaaggc 360
gaaggcttag tgactgcaaa agaagtgatt gatgcagtaa acaaggctgg ttggagaatg 420
aaaacaacaa ccgctaattg tcaaacagg caagctgaca agtttgaaac cgttacatca 480
ggcacaaatg taacctttgc tagtggtaaa ggtacaactg cgactgtaag taaagatgat 540
caaggcaaca tcaactgttat gtatgatgta aatgtcggcg atgccctaaa cgtcaatcag 600
ctgcaaaaaca gcggttgaa tttggattcc aaagcgggtg cagggttcttc gggcaaagtc 660
atcagcggca atgtttcgcc gagcaaggga aagatggatg aaaccgtcaa cattaatgcc 720
ggcaacaaca tcgagattac ccgcaacggg aaaaatatcg acatcgccac ttcgatgacc 780
ccgcagtttt ccagcgtttc gctcggcgcg ggggcggatg cggccacttt gagcgtggat 840
ggggacgcat tgaatgtcgg cagcaagaag gacaacaaac ccgtccgcat taccaatgtc 900
gccccgggcg ttaaagaggg ggatgttaca aacgtgcac aacttaaagg cgtggcgcaa 960
aacttgaaca accgcacoga caatgtggac ggcaacgcgc gtgcgggcat cggccaagcg 1020
attgcaaccg caggtctggt tcaggcgtat ttgccggcga agagtatgat ggcgatcggc 1080
ggcggcactt atcggggcga agccgggttac gccatcggct actccagtat ttccgacggc 1140
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<211> 1509
 <212> DNA
 <213> Neisseria meningitidis

<400> 32

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actctgttgt ttgcaacggg tcaggcaagt gctaacaccc tcaaagccgg cgacaacctg	180
aaaatcaaac aattcaccta ctcgctgaaa aaagacctca cagatctgac cagtgttga	240
actgaaaaat tatcgttttag cgcaaacggc aataaagtca acatcacaag cgacacccaaa	300
ggcttgaatt ttgcgaaaga aacggctggg acgaacggcg acaccacggg tcatctgaac	360
ggtattgggt cgactttgac cgatcggtcg gcaagcgta aagacgtatt aaacgctggc	420
tggaacatta aaggcgtaa aaacgttgat ttcgtccgca cttacgacac agtcgagttc	480
ttgagcgcag atacgaaaac aacgactgtt aatgtggaaa gcaaagacaa cggcaagaaa	540
accgaagtta aaatcgggtgc gaagacttct gttattaaag aaaaagacgg taagttgggt	600
actggtaaag acaaaggcga gaatggttct tctacagacg aaggcgaagg cttagtgtact	660
gcaaaagaag tgattgatgc agtaacaag gctggttga gaatgaaaac aacaaccgct	720
aatgggtcaaa caggtcaagc tgacaagttt gaaaccgtta catcaggcac aaatgtaacc	780
tttgctagtg gtaaaggtac aactgcgact gtaagtaaag atgatcaagg caacatcact	840
gttatgtatg atgtaaatgt cggcgatgcc ctaaacgtca atcagctgca aaacagcggg	900
tggaatttgg attccaaagc ggttgcaggt tcttcgggca aagtcatcag cggcaatgtt	960
tcgccgagca agggaaagat ggatgaaacc gtcaacatta atgccggcaa caacatcgag	1020
attacccgca acggtaaaaa tatcgacatc gccacttoga tgaccccgca gttttccagc	1080
gtttcgctcg gcgcgggggc ggatgcgccc actttgagcg tggatgggga cgcattgaat	1140
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gagggggatg ttacaaacgt cgcacaactt aaaggcgtgg cgcaaaactt gaacaaccgc	1260
atcgacaatg tggacggcaa cgcgcgtgcg ggcacgccc aagcgattgc aaccgcaggt	1320
ctggttcagg cgtatttgcc cggcaagagt atgatggcga tcggcggcgg cacttatcgc	1380
ggcgaagccg gttacgcoat cggctactcc agtatttccg acggcggaaa ttggattatc	1440
aaaggcacgg cttccggcaa ttccgcgggc catttcggtg cttccgcac tgctcggttat	1500
cagtggtaa	1509

<210> 33
 <211> 540
 <212> PRT
 <213> Neisseria meningitidis

<400> 33

Asn	Asn	Glu	Glu	Gln	Glu	Glu	Tyr	Leu	Tyr	Leu	His	Pro	Val	Gln	Arg	
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			20					25					30			
Lys	Glu	Lys	Val	Glu	Glu	Asn	Ser	Asp	Trp	Ala	Val	Tyr	Phe	Asn	Glu	
		35					40					45				
Lys	Gly	Val	Leu	Thr	Ala	Arg	Glu	Ile	Thr	Leu	Lys	Ala	Gly	Asp	Asn	
	50					55					60					
Leu	Lys	Ile	Lys	Gln	Asn	Gly	Thr	Asn	Phe	Thr	Tyr	Ser	Leu	Lys	Lys	
65					70					75					80	
Asp	Leu	Thr	Asp	Leu	Thr	Ser	Val	Gly	Thr	Glu	Lys	Leu	Ser	Phe	Ser	
				85					90					95		
Ala	His	Gly	Asn	Lys	Val	Asn	Ile	Thr	Ser	Asp	Thr	Lys	Gly	Leu	Asn	
			100					105					110			
Phe	Ala	Lys	Glu	Thr	Ala	Gly	Thr	Asn	Gly	Asp	Thr	Thr	Val	His	Leu	
		115					120						125			
Asn	Gly	Ile	Gly	Ser	Thr	Leu	Thr	Asp	Thr	Leu	Leu	Asn	Thr	Gly	Ala	
	130					135					140					
Thr	Thr	Asn	Val	Thr	Asn	Asp	Asn	Val	Thr	Asp	Asp	Glu	Lys	Lys	Arg	
145					150					155					160	
Ala	Ala	Ser	Val	Lys	Asp	Val	Leu	Asn	Ala	Gly	Trp	Asn	Ile	Lys	Gly	
				165					170					175		
Val	Lys	Pro	Gly	Thr	Thr	Ala	Ser	Asp	Asn	Val	Asp	Phe	Val	Arg	Thr	
			180					185					190			
Tyr	Asp	Thr	Val	Glu	Phe	Leu	Ser	Ala	Asp	Thr	Lys	Thr	Thr	Thr	Val	
	195						200					205				
Asn	Val	Glu	Ser	Lys	Asp	Asn	Gly	Lys	Lys	Thr	Glu	Val	Lys	Ile	Gly	
	210					215					220					
Ala	Lys	Thr	Ser	Val	Ile	Lys	Glu	Lys	Asp	Gly	Lys	Leu	Val	Thr	Gly	
225					230					235					240	
Lys	Asp	Lys	Gly	Glu	Asn	Gly	Ser	Ser	Thr	Asp	Glu	Gly	Glu	Gly	Leu	
				245					250					255		
Val	Thr	Ala	Lys	Glu	Val	Ile	Asp	Ala	Val	Asn	Lys	Ala	Gly	Trp	Arg	

Met	Lys	Thr	Thr	Thr	Ala	Asn	Gly	Gln	Thr	Gly	Gln	Ala	Asp	Lys	Phe
	275						280					285			
Glu	Thr	Val	Thr	Ser	Gly	Thr	Asn	Val	Thr	Phe	Ala	Ser	Gly	Lys	Gly
	290					295					300				
Thr	Thr	Ala	Thr	Val	Ser	Lys	Asp	Asp	Gln	Gly	Asn	Ile	Thr	Val	Met
305					310					315					320
Tyr	Asp	Val	Asn	Val	Gly	Asp	Ala	Leu	Asn	Val	Asn	Gln	Leu	Gln	Asn
			325						330					335	
Ser	Gly	Trp	Asn	Leu	Asp	Ser	Lys	Ala	Val	Ala	Gly	Ser	Ser	Gly	Lys
			340					345					350		
Val	Ile	Ser	Gly	Asn	Val	Ser	Pro	Ser	Lys	Gly	Lys	Met	Asp	Glu	Thr
	355						360					365			
Val	Asn	Ile	Asn	Ala	Gly	Asn	Asn	Ile	Glu	Ile	Thr	Arg	Asn	Gly	Lys
	370					375					380				
Asn	Ile	Asp	Ile	Ala	Thr	Ser	Met	Thr	Pro	Gln	Phe	Ser	Ser	Val	Ser
385					390					395					400
Leu	Gly	Ala	Gly	Ala	Asp	Ala	Pro	Thr	Leu	Ser	Val	Asp	Gly	Asp	Ala
			405						410					415	
Leu	Asn	Val	Gly	Ser	Lys	Lys	Asp	Asn	Lys	Pro	Val	Arg	Ile	Thr	Asn
		420					425						430		
Val	Ala	Pro	Gly	Val	Lys	Glu	Gly	Asp	Val	Thr	Asn	Val	Ala	Gln	Leu
	435						440					445			
Lys	Gly	Val	Ala	Gln	Asn	Leu	Asn	Asn	Arg	Ile	Asp	Asn	Val	Asp	Gly
	450					455					460				
Asn	Ala	Arg	Ala	Gly	Ile	Ala	Gln	Ala	Ile	Ala	Thr	Ala	Gly	Leu	Val
465					470				475						480
Gln	Ala	Tyr	Leu	Pro	Gly	Lys	Ser	Met	Met	Ala	Ile	Gly	Gly	Gly	Thr
			485						490					495	
Tyr	Arg	Gly	Glu	Ala	Gly	Tyr	Ala	Ile	Gly	Tyr	Ser	Ser	Ile	Ser	Asp
		500						505					510		
Gly	Gly	Asn	Trp	Ile	Ile	Lys	Gly	Thr	Ala	Ser	Gly	Asn	Ser	Arg	Gly
	515						520					525			
His	Phe	Gly	Ala	Ser	Ala	Ser	Val	Gly	Tyr	Gln	Trp				
	530					535					540				

<210> 34
 <211> 541
 <212> PRT
 <213> Neisseria meningitidis

<400> 34

Thr Asp Glu Asp Glu Glu Glu Glu Leu Glu Ser Val Gln Arg Ser Val
1 5 10 15

Val Gly Ser Ile Gln Ala Ser Met Glu Gly Ser Val Glu Leu Glu Thr
20 25 30

Ile Ser Leu Ser Met Thr Asn Asp Ser Lys Glu Phe Val Asp Pro Tyr
35 40 45

Ile Val Val Thr Leu Lys Ala Gly Asp Asn Leu Lys Ile Lys Gln Asn
50 55 60

Thr Asn Glu Asn Thr Asn Ala Ser Ser Phe Thr Tyr Ser Leu Lys Lys
65 70 75 80

Asp Leu Thr Gly Leu Ile Asn Val Glu Thr Glu Lys Leu Ser Phe Gly
85 90 95

Ala Asn Gly Lys Lys Val Asn Ile Ile Ser Asp Thr Lys Gly Leu Asn
100 105 110

Phe Ala Lys Glu Thr Ala Gly Thr Asn Gly Asp Thr Thr Val His Leu
115 120 125

Asn Gly Ile Gly Ser Thr Leu Thr Asp Met Leu Leu Asn Thr Gly Ala
130 135 140

Thr Thr Asn Val Thr Asn Asp Asn Val Thr Asp Asp Glu Lys Lys Arg
145 150 155 160

Ala Ala Ser Val Lys Asp Val Leu Asn Ala Gly Trp Asn Ile Lys Gly
165 170 175

Val Lys Pro Gly Thr Thr Ala Ser Asp Asn Val Asp Phe Val Arg Thr
180 185 190

Tyr Asp Thr Val Glu Phe Leu Ser Ala Asp Thr Lys Thr Thr Thr Val
195 200 205

Asn Val Glu Ser Lys Asp Asn Gly Lys Lys Thr Glu Val Lys Ile Gly
210 215 220

Ala Lys Thr Ser Val Ile Lys Glu Lys Asp Gly Lys Leu Val Thr Gly
225 230 235 240

Lys Gly Lys Gly Glu Asn Gly Ser Ser Thr Asp Glu Gly Glu Gly Leu
245 250 255

Val Thr Ala Lys Glu Val Ile Asp Ala Val Asn Lys Ala Gly Trp Arg
260 265 270

Met Lys Thr Thr Thr Ala Asn Gly Gln Thr Gly Gln Ala Asp Lys Phe
275 280 285

Glu Thr Val Thr Ser Gly Thr Lys Val Thr Phe Ala Ser Gly Asn Gly
 290 295 300
 Thr Thr Ala Thr Val Ser Lys Asp Asp Gln Gly Asn Ile Thr Val Lys
 305 310 315 320
 Tyr Asp Val Asn Val Gly Asp Ala Leu Asn Val Asn Gln Leu Gln Asn
 325 330 335
 Ser Gly Trp Asn Leu Asp Ser Lys Ala Val Ala Gly Ser Ser Gly Lys
 340 345 350
 Val Ile Ser Gly Asn Val Ser Pro Ser Lys Gly Lys Met Asp Glu Thr
 355 360 365
 Val Asn Ile Asn Ala Gly Asn Asn Ile Glu Ile Thr Arg Asn Gly Lys
 370 375 380
 Asn Ile Asp Ile Ala Thr Ser Met Thr Pro Gln Phe Ser Ser Val Ser
 385 390 395 400
 Leu Gly Ala Gly Ala Asp Ala Pro Thr Leu Ser Val Asp Asp Glu Gly
 405 410 415
 Ala Leu Asn Val Gly Ser Lys Asp Ala Asn Lys Pro Val Arg Ile Thr
 420 425 430
 Asn Val Ala Pro Gly Val Lys Glu Gly Asp Val Thr Asn Val Ala Gln
 435 440 445
 Leu Lys Gly Val Ala Gln Asn Leu Asn Asn Arg Ile Asp Asn Val Asn
 450 455 460
 Gly Asn Ala Arg Ala Gly Ile Ala Gln Ala Ile Ala Thr Ala Gly Leu
 465 470 475 480
 Val Gln Ala Tyr Leu Pro Gly Lys Ser Met Met Ala Ile Gly Gly Gly
 485 490 495
 Thr Tyr Leu Gly Glu Ala Gly Tyr Ala Ile Gly Tyr Ser Ser Ile Ser
 500 505 510
 Ala Gly Gly Asn Trp Ile Ile Lys Gly Thr Ala Ser Gly Asn Ser Arg
 515 520 525
 Gly His Phe Gly Ala Ser Ala Ser Val Gly Tyr Gln Trp
 530 535 540

<210> 35
 <211> 461
 <212> PRT
 <213> Neisseria meningitidis

<400> 35

Asn Asn Glu Thr Asp Leu Thr Ser Val Gly Thr Glu Lys Leu Ser Phe
 1 5 10 15

Ser	Ala	Asn	Gly	Asn	Lys	Val	Asn	Ile	Thr	Ser	Asp	Thr	Lys	Gly	Leu
		20						25					30		
Asn	Phe	Ala	Lys	Glu	Thr	Ala	Gly	Thr	Asn	Gly	Asp	Thr	Thr	Val	His
		35					40					45			
Leu	Asn	Gly	Ile	Gly	Ser	Thr	Leu	Thr	Asp	Thr	Leu	Leu	Asn	Thr	Gly
		50				55					60				
Ala	Thr	Thr	Asn	Val	Thr	Asn	Asp	Asn	Val	Thr	Asp	Asp	Glu	Lys	Lys
65					70					75					80
Arg	Ala	Ala	Ser	Val	Lys	Asp	Val	Leu	Asn	Ala	Gly	Trp	Asn	Ile	Lys
			85						90					95	
Gly	Val	Lys	Pro	Gly	Thr	Thr	Ala	Ser	Asp	Asn	Val	Asp	Phe	Val	Arg
			100					105					110		
Thr	Tyr	Asp	Thr	Val	Glu	Phe	Leu	Ser	Ala	Asp	Thr	Lys	Thr	Thr	Thr
		115					120					125			
Val	Asn	Val	Glu	Ser	Lys	Asp	Asn	Gly	Lys	Lys	Thr	Glu	Val	Lys	Ile
		130				135					140				
Gly	Ala	Lys	Thr	Ser	Val	Ile	Lys	Glu	Lys	Asp	Gly	Lys	Leu	Val	Thr
145					150					155					160
Gly	Lys	Asp	Lys	Gly	Glu	Asn	Gly	Ser	Ser	Thr	Asp	Glu	Gly	Glu	Gly
				165					170					175	
Leu	Val	Thr	Ala	Lys	Glu	Val	Ile	Asp	Ala	Val	Asn	Lys	Ala	Gly	Trp
			180					185					190		
Arg	Met	Lys	Thr	Thr	Thr	Ala	Asn	Gly	Gln	Thr	Gly	Gln	Ala	Asp	Lys
		195					200					205			
Phe	Glu	Thr	Val	Thr	Ser	Gly	Thr	Asn	Val	Thr	Phe	Ala	Ser	Gly	Lys
		210				215					220				
Gly	Thr	Thr	Ala	Thr	Val	Ser	Lys	Asp	Asp	Gln	Gly	Asn	Ile	Thr	Val
225					230					235					240
Met	Tyr	Asp	Val	Asn	Val	Gly	Asp	Ala	Leu	Asn	Val	Asn	Gln	Leu	Gln
			245						250					255	
Asn	Ser	Gly	Trp	Asn	Leu	Asp	Ser	Lys	Ala	Val	Ala	Gly	Ser	Ser	Gly
			260					265					270		
Lys	Val	Ile	Ser	Gly	Asn	Val	Ser	Pro	Ser	Lys	Gly	Lys	Met	Asp	Glu
		275					280					285			
Thr	Val	Asn	Ile	Asn	Ala	Gly	Asn	Asn	Ile	Glu	Ile	Thr	Arg	Asn	Gly
						295					300				
Lys	Asn	Ile	Asp	Ile	Ala	Thr	Ser	Met	Thr	Pro	Gln	Phe	Ser	Ser	Val
305					310					315					320

<211> 51

<213> Neisseria meningitidis

caattaacgg ccgaataaaa ggaagccgat atgaacaaaa tataccgcac c

51

<211> 31

<213> *Neisseria meningitidis*

tggaatccat ggaatcgcca cccttccctt c

31

<210> 42

<211> 30
 <212> DNA
 <213> Neisseria meningitidis

<400> 42
 ggtcagatct gtttcattgt tagcacttgc 30

<210> 43
 <211> 30
 <212> DNA
 <213> Neisseria meningitidis

<400> 43
 gatcaggcct gtatcttcat cggtagcatt 30

<210> 44
 <211> 39
 <212> DNA
 <213> Neisseria meningitidis

<400> 44
 gacgaaatca acgttcttag cacttgctg aaccgttgc 39

<210> 45
 <211> 24
 <212> DNA
 <213> Neisseria meningitidis

<400> 45
 aacgttgatt tcgtccgcac ttac 24

<210> 46
 <211> 39
 <212> DNA
 <213> Neisseria meningitidis

<400> 46
 aacgcttgcc gcacgcttag cacttgctg caacgttgc 39

<210> 47
 <211> 24
 <212> DNA
 <213> Neisseria meningitidis

<400> 47
 cgtgcgga gcgtaaaga cgta 24

<210> 48
 <211> 72
 <212> DNA
 <213> Neisseria meningitidis

<400> 48
cagcgagtag gtgaattggt tgattttcag gttgtcgccg gctttgaggg tgtagcact 60
tgccctgaacc gt 72

<210> 49
<211> 24
<212> DNA
<213> Neisseria meningitidis

<400> 49
ttcacctact cgctgaaaaa agac 24

<210> 50
<211> 57
<212> DNA
<213> Neisseria meningitidis

<400> 50
gccagcggtt aatacggtt taaogcttgc cgcacgatcg gtcaaagtcg aaccaat 57

<210> 51
<211> 57
<212> DNA
<213> Neisseria meningitidis

<400> 51
gtattaaacg ctggctggaa cattaaaggc gttaaaaacg ttgatttcgt ccgcact 57

<210> 52
<211> 11
<212> PRT
<213> Neisseria meningitidis

<220>
<221> misc_feature
<223> "X" is any amino acid or absent amino acid

<400> 52

Xaa Xaa Glu Thr Asp Leu Thr Ser Val Gly Thr
1 5 10